Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 1, 2, 22, 27, 90 and 95 of	)	WT Docket No. 10-4
the Commission's Rules to improve Wireless	)	
Coverage Through the Use of Signal Boosters	)	

REPLY COMMENTS REGARDING NOTICE OF PROPOSED RULE MAKING (NPRM)

Jack Daniel, dba Jack Daniel Company, pursuant to the Commission's Public Notice of April 5, 2011,[1] hereby respectfully submits its comments in the above-referenced proceeding.

Jack Daniel is the sole proprietor of The Jack Daniel Company, a provider of consultation services, training programs, system design and materials specializing in in-building communications enhancement nationwide. Jack Daniel is a nationally recognized authority on public safety use of signal boosters with over 25 years experience in that field, preceding the first FCC certified signal booster in 1985.

Jack Daniel has spoken on the subject of signal boosters, in-building communications and codes that call out a requirement for public safety ino0door wireless coverage before such

[1] DA 10-14, released January 6, 2010 and extension of filing time released June 20, 2011.

notable organizations such as the Association of Public-safety Officials, International (APCO), National Public Safety Telecommunications Council (NPSTC), National Fire Protection Association (NFPA), International Code Council (International Fire Codes), International Wireless Communications Expo (IWCE), Institute for International Research (IIR), American Conference Institute (ACI) DAS Council, Enterprise Wireless Alliance (EW A) Institute as well as before many local public safety agencies and their associations.

Jack Daniel is a Life member of the Association of Public-safety Officials, International (APCO) Fellow of the Radio Club of America (RCA) and member of National Fire Protection Association, International Code Council (ICC), Association of Police Chiefs International (IACP) and Association of Fire Chiefs (IAFC).

Jack Daniel was vice-chair of the National Public Safety Telecommunications Council (NPSTC) In-Building Communications Best Practices committee, and a contributor to the in-building codes developed by the National Fire Protection Association (NFPA) and International Code Council (ICC) International Fire Code (IFC) section.

Signal booster applications that Jack Daniel has contributed to include communication systems used in major international airports, high-rise buildings, subway systems, nuclear power plants, U.S. military applications and for outdoor coverage fill-in.

Like APCO and other public safety organizations, Jack Daniel supports and engages in the process of local authority adoption of fire and building codes that require signal booster in structures for the benefit and protection of first responders. He was an advisor to the first in-building code in the United States[2].

Jack Daniel focuses on implementing highly reliable and survivable, life saving wireless communications capability to Fire, Law Enforcement and Emergency Medical Services within structures and obstructed areas.

Jack Daniel in involved in the recommendation, sale, system design and implementation of both Class A and Class B signal boosters from various manufacturers.

While it could be more profitable to only promote the sale of Class A signal boosters, I believe profit is secondary to my responsibilities as a member of the public safety community.

I. SUMMARY

Most of the comments files on July, 24, 2010 regarding the NPRM were focused on signal boosters that would be used in subscriber based wireless services. As I have stated before

[2] Re. City of Burbank Ca, Ordinance No. 3265, effective September 21, 1991.

in this proceeding it is extremely important that Part 90 private radio services, such as public safety, be held separate from subscriber based services rules.

I do support those comments that forward the proper use of signal boosters within public safety licensees.

The intent of Jack Daniel is the same as the Commission's; minimize any additional burdens upon the Commission and to regulate any interference that degrades the operation of a licensees operation, especially public safety communications.

Jack Daniel has relationships with multiple manufacturers of all types and classes of wireless coverage enhancement products, including both Class A and Class B signal boosters, RF Over fiber optics, back-up power systems and other devices used in the current art.

Jack Daniel's purpose for commenting is to assure public safety licensees have competitive choices of hardware, including signal booster classes, needed to assure reliable and cost effective wireless communications within obstructed areas such as buildings, basements, subways, mines, canyons, etc.

Jack Daniel’s comments are focused upon Part 90 licensees only and comments on subscriber-based services are only made when necessary for that focus.

This Reply to Comments supports and refines my original comments filed on this proceeding.

I. <u>Signal Booster Classes.</u>

Commenters have presented statements that support the fact there is no clear line of demarcation between Class A and Class B signal booster classifications.

The commission as well as all Class A commenters agree the delay within single channel bandwidths is unacceptable except within confined areas, such as subways and mines, where there is no competition between the boosted signal and the direct signal from the base station.

Due to the close proximity of consumer mobile signal boosters to the associated cell sites this is seldom a problem for consumer based service providers.

However, the only solution that makes Part 90 private radio Class A signal boosters acceptable in unconfined areas is to increase the passband bandwidth to some multiple of signal channel bandwidths.

When the Class A signal booster passband is increased to solve the delay problem the majority of installations would result in the Class A signal boosters amplifying channels that are licensed to the intended licensee and becoming similar in operation to a Class B ‘broadband’ signal booster.

Class B signal boosters may be capable of reducing their passbands to only amplify a contiguous group of channels authorized to one licensee, and operationally be the same as a Class A signal booster.

II. **Outdoor use of Class B Signal Boosters**

One reason for these different signal booster classifications lies in regulating the location each can be used under current 90.219 rules.

The location wording was originally implemented out of caution that Class B signal boosters might cause interference if used outdoors which has not materialized.

Both classes have the same potential of causing interference to others AND what interference has occurred was caused almost exclusively subscriber based service installations interfering with private radio installations.

It has also been proven in practice Class B signal boosters do perform in outdoor applications without interfering with others when installed by experienced and trained professionals.[3] [4]

Eliminating Class B signal boosters while acknowledging Class A signal boosters must have wide passbands to function properly simply puts all signal boosters into one common class.

I submit there are sufficient differences in technical requirements, such as adjacent channel selectivity, to retain the two classifications.

III. Class B signal booster availability does not restrain the use of Class A Signal Boosters.

[3] National Association of manufacturers and MRFAC comments July 25, 2011, last paragraph, page 3.
[4] Public Safety Licensees comment July 25, 2011, page 3.

Part 90 licensees who desire to use Class A signal booster are not restricted from doing so when Class B signal boosters also exist . Licensees should not be forced to use Class A signal boosters only.

IV. Registration and Licensing of Fixed Signal Booster Installations.

Some commenters support licensing all fixed signal booster installations while others commented some form of centralized registration is adequate. I support the latter except where the ERP per channel exceeds 5 watts.

Using common site licensing procedures for all 5 watt ERP/cahannel fixed signal booster installations would place a great burden upon the Commission and add unnecessary frequency coordination fees and delays.

However there can be benefits to all parties in 'registering' fixed installations., especially in helping licensees identify signal boosters operating under their call sign and in tracing any suspected interference from a signal booster.

Registration can be a comparatively simple and inexpensive process. Data is entered by the signal booster installer themselves on-line in a similar fashion as the ECFS program.

V. Use of Mobile Signal Boosters in Part 90 services

Several commenters believe the proposed Part 95 rules for mobile signal boosters applies to all Part 90 licensees. They overlook these rules only apply to signal boosters used for subscription based services.

I agree with those commenters who want to limit Part 95 subscriber based signal boosters to subscription based services mobile operation only.

Fixed signal booster installations MUST be controlled by the licensees as they are the party responsible for proper installation and operation of such signal boosters. In more sophisticated wireless systems unknown fixed installations can become problematic to the operation of the overall radio network.

VI. Class B Adjacent Channel Isolation.

In my comments filed on Jul 25, 2011, I suggested all Class B signal boosters should "attenuate emissions +/- 1 MHz from the upper and lower edges of each passband by 60 dB or greater. "

I have been advised by some manufacturers this amount of attenuation will add considerably to the size and costs of Class B signal booster while gaining little real improvement over existing practices. I therefore modify my specification to +/- 30 dB attenuation, mininum.

VII. <u>Use of Certified persons for Fixed Installations in Part 90.</u>

Several commenters propose only "certified' persons can engineer and operate fixed signal booster installations. I concur with those commenters.

The question becomes how is 'certified' status obtained and what is adequate testing of the individuals. At this time I know of only one formal in-building certification for individuals, operated by Global Educational Services division of Bird Technologies.

If such a requirement could be codified within the Commission's rules for Part 90 signal boosters I have no doubt there would be several testing companies with a very short period.

VIII. <u>Higher Signal Booster Power Levels</u>

At least one commenter suggests the permissible power level of fixed Part 90 signal boosters be raised up to 35 watts per channel and licensed.

This is an unnecessary suggestion as the current rules permit such *licensed* operation. Any ERP above 5 watts changes the operation from that of a signal booster to that of a base station.

Perhaps the reason for this approach would be to reduce frequency coordination, the last thing that should be done with higher ERPs.

IX. Anti-Oscillation Schemes

There is confusion amongst many commenters that the proposed methods of disabling errant subscriber based mobile signal boosters in Part 95 applies to, or should apply to, all Part 90 *fixed* signal booster installations.

Some commenters with public safety experience, such as USA Mobility, understand a shut down of a public safety signal booster can put life and property at risk at the exact time the signal booster is needed.

Wilson has been very clever in their approaches of detecting and acting upon oscillations however those designs are dependent upon characteristics of subscriber based services that do not exist in other Part 90 services, such as continuous carriers on the channels.

In public safety fixed installations there can be conditions that result in a false indication of oscillation.

Oscillation detection uses the automatic gain control (AGC) voltages as an indicator of oscillations. These circuits assumes the signal booster is oscillating when the maximum AGC control voltage is being applied without any further reduction of output power possible.

When this occurs, the signal booster is turned off and must be manually reset before becoming operational again.

This is a completely valid approach in mobile signal booster applications but unreliable for fixed in-building installations.

For example, there is a medical emergency within an underground parking garage. The normal public safety communications inside the garage is with less than 6 watt portables and the signal booster is adjusted to those power levels.

An Emergency Medical Services team arrives on scene in a vehicle that has a 45 watt mobile installed in it. When the mobile transmitter is activated the higher power level causes the signal booster AGC to activate maximum attenuation of the signal booster amplifiers.

This generates the same conditions as an oscillating signal booster so the signal booster is eventually disabled. The signal booster doesn’t know this is a temporary condition that is NOT an oscillation.

The signal booster is disabled until someone locates it somewhere in the building and has access to the reset button. On the mean time public safety communications are non existent.

This is an unacceptable situation for first responders.

Despite various claims of the perfect solution for oscillation control they all basically operate in a similar manner.

The only solution at this time is to have the signal booster system designed professionally to optimize the signal boosters dynamic gain control so such situations are rare if any.

Do not mandate automatic disabling of any class signal boosters in fixed installations.

Activating such circuits can always be done if the system designer desires or it is included in local fire codes.

Conclusion

I stand by my original comments except as stated above. The Commission is to be commended on their leadership in this complex matter.

Respectfully submitted by;

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